

Final Cabinet Assembly Hardware Tightness Torque Audit

1.0 Objective & Quality Standard

The objective of this procedure is to verify that all critical fasteners on final cabinet assemblies are tightened to the specified torque range, ensuring structural integrity, preventing loosening during transport or use, and eliminating defects related to loose hardware. The acceptable torque tolerance for all M6 screws is $4.0 \text{ N}\cdot\text{m} \pm 0.5 \text{ N}\cdot\text{m}$, and for M8 screws is $8.0 \text{ N}\cdot\text{m} \pm 1.0 \text{ N}\cdot\text{m}$. Any fastener found outside these ranges must be flagged and re-torqued.

2.0 Required Tools & Gauges

- Pre-set torque screwdriver (range 2-12 N·m) with interchangeable bits (Phillips #2, Torx T20, hex 4mm)
- Torque wrench (range 5-20 N·m) with appropriate socket for M8 bolts
- Digital torque tester (for verifying tool calibration, accuracy $\pm 0.1 \text{ N}\cdot\text{m}$)
- Calibration log sheet or digital QA checklist in ShopDocs
- Red-tag labels for non-conforming units
- Clean lint-free cloth

3.0 Safety & Material Handling

- Wear safety glasses to protect against debris or tool slip.
- Use cut-resistant gloves when handling sharp edges or fasteners.
- Ensure the cabinet is placed on a stable, level work surface to prevent tipping during torque application.
- Handle finished panels with clean, rubber-grip gloves to prevent oil transfer or scratches.
- Do not over-torque fasteners beyond the specified range to avoid stripping threads or damaging components.

4.0 Step-by-Step Procedure

1. Verify that the torque screwdriver and torque wrench have been calibrated within the last 30 days using the digital torque tester. Record calibration check in the QA log.
2. Set the torque screwdriver to the lower limit of the specified range for M6 fasteners (3.5 N·m) and the torque wrench to the lower limit for M8 fasteners (7.0 N·m).
3. Select the first cabinet assembly from the completed production batch. Ensure it is fully assembled with all doors, drawers, and hardware installed.
4. Starting with the hinge screws on the left door, apply the torque screwdriver to each screw in a clockwise direction. If the screwdriver clicks before the screw moves, the torque is acceptable. If the screw rotates without a click, it is under-torqued.
5. Repeat step 4 for all hinge screws on both doors and all drawer slide screws. Document the torque reading for each fastener on the QA checklist.
6. Using the torque wrench, check all M8 bolts securing the cabinet frame corners and any structural brackets. Apply torque in a clockwise motion. Record each reading.

7. If any fastener is found to be under-torqued, tighten it to the middle of the specified range (4.0 N·m for M6, 8.0 N·m for M8) and re-check. If over-torqued, loosen and re-tighten to the correct value.
8. After adjusting any fastener, re-check all adjacent fasteners on the same component to ensure they remain within tolerance.
9. Inspect all fastener heads for signs of stripping, cam-out, or damage. If any damage is found, replace the fastener immediately and re-torque.
10. Wipe down all checked areas with a clean lint-free cloth to remove any debris or oil residue.
11. If all fasteners pass, mark the cabinet as QA-approved in the ShopDocs system. If any fastener fails and cannot be corrected, apply a red-tag label and move the unit to the rework area.
12. Repeat steps 3 through 11 for the next cabinet in the batch until the audit sample size (10% of batch or minimum 5 units) is complete.

5.0 Verification & Defect Reporting

1. After completing the audit, review all recorded torque readings against the specified tolerances. Any fastener outside 3.5-4.5 N·m (M6) or 7.0-9.0 N·m (M8) is a defect.
2. For each defect, log the following in the ShopDocs QA module: unit serial number, fastener location, measured torque, and corrective action taken (re-torqued, replaced, or rework).
3. If more than 5% of fasteners in a single cabinet are defective, escalate to the production supervisor for root cause analysis and potential process adjustment.
4. Red-tagged units must be reworked within 24 hours. After rework, the unit must pass a full re-audit before being released to finished goods.
5. At the end of each shift, compile a summary report of all torque audit results and submit to the QA manager for review.

Regulatory Disclaimer: This document is a generic quality assurance template. The end-user assumes all liability for validating all dimensional tolerances, testing procedures, and engineering specifications against actual production requirements before deployment.